Year 9 Mathematics

Topic: Probability

Task

1. Collect your data:

- go to abs.gov.au
- scroll down, looking to the left for the **Student Centred Learning** icon which is on a green Australia with a big yellow tick – click on this
- find **Visit the Student Area** and select
- then **Access the Random Sampler** and accept conditions
- select **50** as the sample size, select an all **female** and **male** sample, check the box for **All year levels**.
- Download the **data samples file.** (ctrl click on this and download linked file, ensure it is a csv file)
- This gives you the answers to the survey for 50 students either male or female. It is all their answers,

2. Find Percentages

From your data find the percentage of students

1. With blue eyes
2. With brown eyes
3. That are female
4. That are born in spring
5. That have a pet cat
6. Over 150 cm
7. Over 170cm

3. Predict Probabilities

Use your results and the results of others to predict the probability that you could randomly select a student in Australia

1. With blue eyes
2. With brown eyes
3. That are female
4. That are born in Spring
5. That have a pet cat
6. Over 150 cm
7. Over 170cm

Explain how you determined these probabilities

4. Compound Events

What percentage of the student population do you predict will

a) have brown eyes and a pet cat?
b) have blonde hair and are born in spring?
c) be over 170cm and have blonde hair?
d) have brown hair, are male and over 170cm tall?
e) have blonde hair, a pet cat and be over 150cm?

5. Filtering Suspects (this does not refer to your collected data)

The six suspects below are being investigated for their involvement in four independent cases.

Suspect 1	Suspect 2	Suspect 3	Suspect 4	Suspect 5	Suspect 6
155cm	182cm	162cm	156cm	129cm	145cm
Year 9	Year 6	Year 10	Year 9	Year 8	Year 11
Blue eyes	Brown eyes	Blue hair	Hazel eyes	Green eyes	Brown eyes
Pet cat	Pet dog	Pet rabbit	Pet cat	Pet mouse	Pet dog

a)Agent Kennedy is investigating a robbery and knows that it was committed by one of the suspects above. What are the chances that Suspect 4 committed the robbery?

b) Agent Kennedy receives a tip that the robbery was committed by a middle school student with a pet cat. Now what are the chances that Suspect 4 committed the robbery?

c) A tall student (over 160cm) was seen leaving the scene of the second crime, what are the chances it was Suspect 2?

d) In a third case, Agent Patrick found animal hair on a glove left at the scene and tests suggest that the suspect has a pet cat or rabbit. What are the chances Suspect 3 is the criminal?

e) Agent Patrick then receives a tip that the criminal was a Senior School student, Considering this new information, what are the chances now that Suspect 3 is guilty? Give the probability and explain your answer.

f) Agent Morgan is following up a lead that a blue eyed student shorter than 150cm was seen near the middle school locker area just before it was set on fire. What are the chances that Suspect 6 is responsible for the fire? Explain your answer.

g) your turn – create a scenario such that Suspect 5 has $\frac{1}{2}$ chance of committing a crime.

6. Witness accuracy (using your data)

- How many students in your data list fit the description of Suspect 1? What percentage of the whole population would you expect to fit this description?
- Repeat this for each suspect.
- Discuss usefulness of witness descriptions in an investigation.

Criteria	**Grade (A – E)**
Mathematical Skills and Techniques	
Mathematical Understanding and Application	
Discussion and Analysis of the Mathematics	
Communication of Mathematics	
Assessment Grade	

ASSESSMENT